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Amendments to the Claims:

Please replace the present claims with the following amended set of claims.

Listing of Claims:

1. (Amended) (A universal microplate analyzer comprising:
   (a) an illumination module including:
      (1) as an excitation light source, a continuous wave light source and optionally, a flash light source;
      (2) a means for shaping and filtering the light from the excitation light source of (a)(1);
   (b) multiple optical fiber channels for transmitting the filtered excitation light of (a)(2) to a read head or to the bottom of a microplate well;
   (c) at least one read head including:
      (1) a means for shaping and optionally polarizing the filtered excitation light of (a)(2) received from a first one of said optical fiber channels of (b);
      (2) an optical switch including a mirror and beam splitter to reflect the excitation light shaped and optionally polarized in (c)(1) to the top of a sample in said microplate well;
      (3) a means for shaping, filtering, and optionally polarizing light emitted by said sample in response to said excitation light directed into said sample; and
      (4) a light detector for measuring the amount of said emitted light received from the means of (c)(3).

2. (Original) An analyzer of Claim 1, further comprising a second of said multiple optical fiber channels of (b) for transmitting excitation light to the bottom of a microplate well and a third optical fiber channel for transmitting to said read head the light emitted by a sample from the bottom of said microplate well in response to said excitation light of (a)(2).

3. (Amended) An analyzer of Claim 2, wherein said read head further comprises:

(c)(5) a means for shaping said emitted light received from said third optical fiber channel, and

(c)(6) a reflective mirror further included in said optical switch of (c)(2) for directing the shaped emitted light of (c)(5) to said light detector of (c)(4) via said means of (c)(3).

4. (Amended) An analyzer of Claim 1, comprising a fourth one of said multiple optical fiber channels of (b) for transmitting excitation light to the bottom of a microplate well and wherein said optical switch of (c)(2) includes a means for transmitting light not absorbed by a sample in said microplate well to said light detector of (c)(4).

5. (Original) An analyzer of Claim 1, wherein a light pipe is disposed between the means for shaping, filtering, and optionally polarizing emitted light of (c)(3) and the light detector of (c)(4).

6. (Original) An analyzer of Claim 1, wherein said excitation light source is at least one member of the group consisting of a quartz tungsten halogen lamp, a flash Xenon lamp, a continuous Xenon lamp, a deuterium lamp, a laser, and an LED.

7. (Original) An analyzer of Claim 6, wherein said excitation light source is a quartz tungsten halogen lamp.

8. (Original) An analyzer of Claim 6, wherein said excitation light source is a Xenon arc lamp.

9. (Amended) An analyzer of Claim 1 for analysis of a sample by fluorescence comprising:

(a) an illumination module including:

(1) as an excitation light source, a continuous wave light source;

(2) a means for shaping and filtering the light from the excitation light source of (a)(1);

(b) an optical fiber channel for transmitting the filtered excitation light of (a)(2) to a read head;

(c) said read head including:

(1) a means for shaping and optionally polarizing the filtered excitation light of (a)(2) received from the optical fiber channel of (b);

(2) a beam splitter or optionally a dichroic mirror for reflecting the excitation light shaped and optionally polarized in (c)(1) to the top of a sample in said microplate well;

(3) a means for shaping, filtering, and optionally polarizing light emitted from said sample from the top of said microplate well; and

(4) a light detector for measuring the amount of said emitted light received from the means of (c)(3).

10. (Original) An analyzer of Claim 9, wherein said means of (a)(2) for shaping and filtering the excitation light of (a)(1) comprises a first lens for directing the excitation light to a filter, a filter for limiting the excitation to a selected narrow band within the range of 340 to 900 nm, and a second lens for directing the filtered excitation light to said optical fiber channel of (b).

11. (Original) An analyzer of Claim 9, wherein said means of (c)(1) for shaping and optionally polarizing the excitation light received from the optical fiber channel of (b) includes an aperture, a lens for shaping said light, and an optional polarizer.

12. (Original) An analyzer of Claim 11, wherein said means of (c)(1) for shaping and optionally polarizing the excitation light received from the optical fiber channel of (b) includes an aperture, a lens for shaping said light, and a polarizer.

13. (Original) An analyzer of Claim 9, wherein said beam splitter of (c)(2) is a thin film beam splitter.

14. (Original) An analyzer of Claim 9, wherein said beam splitter of (c)(2) is a partially silvered mirror.

15. (Original) An analyzer of Claim 9, wherein said beam splitter is rectangular glass and has an oval silvered portion in the center.

16. (Original) An analyzer of Claim 9, wherein said means of (c)(3) for shaping, filtering, and optionally polarizing emitted light includes a filter, a lens, an optional polarizer, an aperture, and a light pipe.

17. (Original) An analyzer of Claim 9, wherein said means of (c)(3) for shaping, filtering, and optionally polarizing emitted light includes a filter-polarizer set, a lens, an aperture, and a light pipe.

18. (Original) An analyzer of Claim 12, wherein said polarizer comprises a liquid crystal polarization rotator and a fixed polarizer.

19. (Original) An analyzer of Claim 17, wherein said filter polarizer set comprises a liquid crystal polarization rotator and a fixed polarizer.

20. (Original) An analyzer of Claim 9, wherein said excitation light source is at least one member of the group consisting of a quartz halogen lamp, a continuous Xenon lamp, a deuterium lamp, a laser, and an LED.

21. (Original) An analyzer of Claim 20, wherein said excitation light source is a quartz halogen lamp.

22. (Original) An analyzer of Claim 9, further comprising a beam dump for absorbing excitation light passing through said beam splitter.

23. (Amended) An analyzer of Claim 1 for analysis of a sample by time-resolved fluorescence comprising:

(a) an illumination module including:

(1) as an excitation light source, a flash light source;

(2) a means for shaping and filtering the light from the excitation light source of (a)(1);

(b) an optical fiber channel for transmitting the filtered excitation light of (a)(2) to a read head;

(c) said read head including:

(1) a means for shaping the filtered excitation light of (a)(2) received from the optical fiber channel of (b);

(2) a dichroic mirror for reflecting the excitation light produced in (c)(1) to the top of a sample in said microplate well;

(3) a means for shaping and filtering light emitted from said sample from the top of said microplate well; and

(4) a light detector for measuring the amount of said emitted light received from the means of (c)(3).

24. (Original) An analyzer of Claim 23, wherein said means of (a)(2) for shaping and filtering the excitation light of (a)(1) comprises a first lens, for directing the excitation light to a filter, a filter for limiting the excitation light to a selected narrow band within the range of 240 to

900 nm, and a second lens for directing the filtered excitation light to said optical fiber channel (b).

25. (Original) An analyzer of Claim 23, wherein said means of (c)(1) for shaping the excitation light received from the optical fiber channel of (b) includes an aperture and a lens for shaping said light.

26. (Original) An analyzer of Claim 23, wherein said means of (c)(3) for shaping and filtering emitted light includes a filter, a lens, an aperture, and a light pipe.

27. (Original) An analyzer of Claim 23 ,wherein said flash light source is selected from the group consisting of a Xenon arc lamp, a laser, and an LED.

28. (Original) An analyzer of Claim 27, wherein said flash light source is a flash Xenon arc lamp.

29. (Amended) An analyzer of Claim 1 for analysis of a sample by fluorescence comprising:

(a) an illumination module including:
  (1) as an excitation light source, a continuous wave light source;
  (2) a means for shaping and filtering the light from the excitation light source of (a)(1);
(b) a first optical fiber channel for transmitting the filtered excitation light of (a)(2) to the bottom of a microplate well;
(c) a second optical fiber channel for transmitting light emitted by said sample from the bottom of said microplate well;
(d) a read head including:
  (1) a means for shaping and filtering light emitted by said sample from the bottom of said microplate well received

via said second optical fiber channel;

(2) a light detector for measuring the amount of said emitted light received from the means of (d)(1).

30. (Original) An analyzer of Claim 29, wherein said means of (a)(2) for shaping and filtering the excitation light of (a)(1) comprises a first lens for directing the excitation light to a filter, a filter for limiting the excitation light to a selected narrow band within the range of 340 to 900 nm, and a second lens for directing the filtered excitation light said optical fiber channel of (b).

31. (Original) An analyzer of Claim 29, wherein said means of (d)(1) for shaping and filtering light emitted by said sample includes a filter, a lens, and a light pipe.

32. (Original) An analyzer of Claim 29, wherein said emitted light received by said read head is reflected by a mirror into said means for shaping and filtering light of (d)(1).

33. (Original) An analyzer of Claim 29, wherein said continuous light source is selected from the group consisting of a quartz halogen lamp, a continuous Xenon lamp, a deuterium lamp, a laser, and a LED.

34. (Original) An analyzer of Claim 33, wherein said continuous light source is a quartz halogen lamp.

35. (Amended) An analyzer of Claim 1 for analysis of a sample by absorbance comprising:

(a) an illumination module including:

(1) as an excitation light source, a continuous light source or a flash light source;

(2) a means for shaping and filtering the light from the excitation light source of (a)(1);

(b) an optical fiber channel for transmitting the filtered excitation light of (a)(2) to the bottom of a microplate well;

(c) a read head including:

(1) a means for shaping light emitted by said sample from the top of said microplate well; and

(2) a light detector for measuring the amount of said emitted light received from the means of (c)(1).

36. (Original) An analyzer of Claim 35, wherein said means of (a)(2) for shaping and filtering the excitation light of (a)(1) comprises a first lens for directing the excitation light to a filter, a filter for limiting the excitation to a narrow band within the range of 340 to 900 nm, and a second lens for directing the filtered excitation light to said optical fiber channel of (b).

37. (Original) An analyzer of Claim 35, wherein said means of (c)(1) for shaping light emitted by said sample includes a lens, and a light pipe.

38. (Original) An analyzer of Claim 35, wherein said optical fiber channel of (b) is a monofilament.

39. (Original) An analyzer of Claim 38, wherein said optical fiber channel of (b) includes a collimating lens mounted at the end of the optical fiber channel below the microplate well.

40. (Original) An analyzer of Claim 35, wherein said excitation light source is selected from the group consisting of a quartz halogen lamp, a flash Xenon lamp, a continuous Xenon lamp, a deuterium lamp, a laser, and an LED.

41. (Original) An analyzer of Claim 35, wherein said continuous light source is a quartz halogen lamp.

42. (Original) An analyzer of Claim 35, wherein said flash light source is a flash Xenon arc lamp.

43. (Original) An analyzer of Claim 35, wherein said means of (c)(1) includes a diffuser for depolarizing said emitted light.

44. (Amended) An analyzer of Claim 1 for analysis of a sample by luminescence comprising:

(a) a read head including:

(1) a means for shaping and filtering light emitted by a sample in a microplate well in response to addition of reagents;

(2) a light detector for measuring the amount of said emitted light received from the means of (a)(1);

45. (Amended) An analyzer of Claim 44, further comprising a means for introducing reagents to said sample in said microplate well.

46. (Original) An analyzer of Claim 44, wherein said means of (a)(1) for shaping and filtering light include a filter, a lens, an aperture, and a light pipe.

47. (Original) An analyzer of Claim 44, wherein said means for introducing reagents to said sample includes ports disposed in a lens above said sample well.

48. (Original) An analyzer of Claim 1, further comprising Alpha Screen facilities.